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the joinings of the pieces of the mould, which being entirely repaired, we then colour the different parts which compose the piece with colours suitable to each part, that the arteries may be coloured with vermillion; the veins with Prussian blue; the muscles with carmine; and so of the other parts; *which finishes the preparation.*

“*Note*, When we wish to make the wax less brittle, we must add some spermaceti to it; and sometimes a little of the finest Venice turpentine that can be procured.”

Les portions excédentes de cire qui se sont glissées entre les jointures des pièces du moule. La pièce étant entièrement réparée, on colore les différentes parties qui composent la pièce avec des couleurs convenables à chaque partie, en sorte que les artères seront colorées avec du vermillon; et les veines avec du bleu de Prusse; les muscles avec du carmin; ainsi des autres.

Nota que quand on veut rendre la cire moins cassante on y adjoute le blanc de baleine, quelque fois aussi un peu de terebentine de Venise, tout ce qu'il y a de plus fin.

N° XLIII.

Of a living Snake in a living Horse's Eye, and of other unusual Productions of Animals. By JOHN MORGAN, M. D. F. R. S. London, Professor of the Theory and Practice of Physic, Philadelphia.

Read June
5, 1782.

WHETHER there is such a thing in nature as equivocal generation, by which is to be understood the production of any new animal independent of a parent stock of the same kind, has been a subject of controversy amongst philosophers; some asserting the reality of this doctrine, whilst others, as the celebrated Harvey and his followers as strenuously reject it. The latter, which is now deemed the orthodox side of the question, affirm that the young of all are produced from an egg, furnished by the female, and fecundated by a male animal. From the light thrown upon this subject, by the deep researches of Hippocrates, Galen and Aristotle,

among the antients; and amongst the moderns by Malphigi, De Graaf, and above all others by the beforementioned renowned Harvey, physician to king Charles the first of England, (the discoverer of the true circulation of the blood) this induction seems to be established upon an induction of facts and experiments, carrying with them the force of conviction, so far as that induction reaches.

The only room which some suppose there may be for doubt of the universality of the proposition is, that a variety of animals have been found, at different times, to exist in the bodies of other animals, and in extraordinary places, which neither the discoverers of those animals, nor others have been able to trace, with clearness and certainty, to what mankind, in general, can deem a probable or satisfactory origin. Whether it be owing to an impatience to arrive at some conclusion, which can ill brook the difficulties of the inquiry, or to the rareness of the cases falling under the notice of persons capable of making a thorough investigation, and the tedious progress of experimental knowledge; or whether it is that we are apt to suppose the subject does not admit of mathematical certainty from the light of philosophy, I know not; but some men have had recourse to the doctrine of equivocal generation, to account for those productions, as Aristotle and his followers had, in other cases, to certain occult qualities; a term by which they have endeavoured to conceal their ignorance of what they could not explain, but were unwilling to confess. Nor are there wanting, in the present day, many persons, who will sooner deny the testimony of their senses, than allow the existence of an animal production, which they know not how to account for.

This I suppose to proceed from a false pride, or an apprehension of being deemed credulous in a philosophic and enlightened age; and because, in times of ignorance, the passions of illiterate men were wrought upon by fictions to believe in prodigies, whereby they were led blindfold, into
opinions

opinions of religion and philosophy, which had no solid foundation, the race of sceptics I refer to deem it manly not only to withhold their assent from truths they do not understand, but to disown and dispute the reality of them. They do not consider that, by such conduct, they endeavour to divest themselves and others of their rational faculties, and of that natural curiosity implanted in man by his Creator, for the wisest purpose, as a guide for investigating facts, in order to lead him to knowledge, which has given birth to discoveries of the greatest importance to mankind.

In answer to the cavils of minute philosophers, I would briefly remark the first step to new discoveries, is an exact attention to the phenomena of nature, unbiassed by preconceived hypotheses, and that it is as much a mark of a defective understanding to admit too little for truth, upon evidence, as to believe too much from credulity.

I have been led into the above train of observations from a singular phenomenon that may be now seen in this city, and which is worthy the inspection of the curious. It is advertised in the public newspapers, viz. the Pennsylvania Gazette, May 23d, as worthy of the attention and critical inspection of all curious persons, whether philosophers or physicians, and particularly the latter, as it may, for what they know, if properly examined into, throw some useful light upon the functions and diseases of the animal body.

What I refer to is an horse with a snake in its eye, to be seen in Arch-street, between Sixth and Seventh streets, not only possessed of mere life, but endowed with a very brisk locomotive faculty. True philosophers will not treat the assertion as idle, fictitious or romantic, but see and judge for themselves.

The writer of this piece has undertaken the present task, on purpose to excite every class of people to satisfy themselves of the reality of the fact, that when recorded in the very place where all have it in their power to determine its existence, on the testimony of their own eyesight, they may

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not plead ignorance and unbelief. He professes, for his own part, to be as little credulous or liable to impositions, from accounts of pretended miraculous appearances, as his neighbours, however learned. Indeed he has ever strenuously opposed, and thinks he ever shall, what he deems empty tales of visionary speculatists, bred by weak fancies, or raised by designing men, to amuse or deceive the vulgar; but he admires and reveres the unsearchable wisdom of the divine architect, who framed this spacious universe, teeming with myriads of animal beings, as well in those instances where his design and footsteps are visible, as in those which lay more remote from human comprehension. Upon the first relation of this curious history from others, unacquainted with the structure of the eye, and therefore more likely to pass a wrong judgment; and, till he had an opportunity to examine it himself, he believed the appearance to be some unusual disease, or a filamentary production on the crystalline humour, from a stroke or inflammation of the eye, and that a convulsion in the nerves of its coat might produce an irritation in that organ, and a tremulous motion, which might impose upon those who, not knowing how to account for the appearance, should content themselves with calling it a snake in the eye, merely from its resemblance, on first sight, to that animal. But from the closest ocular examination, with unwearied attention, repeated more than once, he conceives he is not mistaken, in asserting that there is a real snake in the eye; which, from the vivacity and briskness of its motion, exceeds that of any worm, and equals that of any kind of serpent he has ever seen.

To satisfy the public in general, as well those who have now an opportunity of seeing it, as such who may happen never to see it, I think it will not be amiss to describe its appearance, and to deliver what I have been able to collect of its history.

The

The horse in whose left eye this extraordinary *lusus nature* is visible, is of a sorrel colour, nine years old; it belonged to Doctor Dayton near the lines at Elizabeth-town, and, I am told, appeared to have no uncommon appearance in either eye, till within a few months ago. The first particular circumstance which excited the owner's attention was, that having lent him to a friend to take a ride in a chair, although it was not known to be vicious or unruly before, it could not now be kept under any government, but ran away with, and dashed the chair to pieces. The right eye still continues in a sound state.

Soon after, viz. about ten weeks ago, Mr. Richard Wells, merchant of this city, a gentleman of probity and of great philosophic knowledge, being at Elizabeth-town in company with Doctor Dayton, this gentleman told him he would shew him a curiosity as great perhaps as he had ever seen, namely, a living snake in a living horse's eye. Mr. Wells then desiring to see it, upon looking into the eye, discovered the animal very plainly, in a constant serpentine motion, but necessarily in a somewhat convoluted form, as its length was equal, as nearly as he could judge, to two diameters and an half of the eye, which could not measure less than between three and four inches. The head and tail, or if you please, the two extremities of the animal were then visible, and the horse's eye still retained its transparency enough to admit seeing the whole of the snake distinctly.

The horse was soon after purchased by a free negro, on purpose to bring to Philadelphia for show, in order to gratify the curiosity of the virtuosi of every class, by giving them an opportunity of seeing and contemplating so curious a phænomenon, and of communicating the result of their inquiries to the learned, for the information of the public at large.

At present, apparently from the brisk and almost constant motion of the animal, which is somewhat increased
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in length, since the inspection at Elizabeth-town, and which is as thick as a knitting needle, or piece of common twine, as nearly as can be determined through the intervening medium, the aqueous and vitreous humours of the eye are confounded (the fine cellular texture of the latter being broke down) and tinged with the softest part of the crystalline, so as to assume somewhat of a white milky appearance, bordering on the colour of a cataract. The Iris appears to be greatly dilated, or rather wholly destroyed. For the septum, or partition which separates the anterior from the posterior chambers, in a sound eye, must be broken down, as the animal, or, to speak like a sceptic, the animal appearance of a snake is continually receding into the fundus and back part, and by times coming forward into the anterior part of the eye, with a convoluted brisk motion. I cannot think a snake of the same size moving briskly in a tumbler-ful of fair water, or of water discoloured with a tea-spoonful of milk, would be more visible; but the coats of the eye and humours have now somewhat of a milky appearance, or colour of an incipient cataract.

It may be justly presumed, that whatever might be the state of vision, at first appearance of this surprising phenomenon, that eye must be now blind. The lids are commonly closed, probably owing to pain excited in the eye by so troublesome a guest; but there is no bloodshot appearance on the cornea, though the surrounding parts, namely, the palpebræ, are a little tumid. To get a view of the eye, the keeper commonly strikes the horse on its back with an open hand, at which, as if frightened, it opens the lid of the left, as well as widens the opening of the right eye, which continues disclosed but a short time; however this gives an opportunity for inspection for five or six seconds of time together, and the blows must be repeated to keep the eye open, when a person wishes to have a longer time for inspection.

The

The milky appearance has for some weeks grown gradually more opaque; from which circumstance it is probable the disease occasioned by the presence of an extraneous body, or unnatural animal irritating the organ, will gradually produce too great obscurity to afford that satisfaction in viewing it, which hitherto it has done and still continues to afford.

It has been my wish, and I have expressed my opinion to several gentlemen that it would be worth while, to make up a sum of money and purchase the horse for sake of dissecting the eye, whilst the animal is yet alive, but no notice has been yet taken of it: Perhaps the owner keeping it for show places too high a value upon it. I have further desired, if that purchase is not made, to have an opportunity of taking out the eye and dissecting it immediately after death, whenever that event takes place, if it happens where I am.

The eye has been inspected by several gentlemen of the faculty, who are astonished, and at a loss to account for the appearance on common principles or from known diseases; a question then naturally arises in the minds of most who have seen or heard of it, viz. If it be a real snake or other living animal, how it got there, or whether there are other incontestible histories to match it, in the annals of medical history, of animals bred in man or other animals, as difficult to be accounted for?

I answer, Facts are what I am more concerned to establish than speculative opinions; therefore instead of leading to theories that may be idle and groundless, I shall be satisfied to refer all who doubt the reality of its being a snake in the eye, first to the history of the Guinea worm, of which I have had more than one case falling under my own care, and have seen others in the Pennsylvania hospital, extracted from the leg, several yards in length; secondly, to the well known history of a jointed worm bred in the liver of Mrs Holt, in this city, about

thirty years ago, of about twenty inches long and near three in circumference, recorded in the medical essays of a society of physicians in London. This worm I have seen ten years after preserved in spirit, in the anatomical cabinet of the celebrated Dr. William Hunter of that place; and thirdly, I refer to the history and engraving of one exactly similar, as large as the life, inserted in the second volume of Edinburgh medical essays, plate fourth; and lastly, to autopsy, by examining the eye of the horse in question, which will afford ocular demonstration of the fact.

I shall add to these some observations of that prince of anatomists in his day, the famous Ruysch, who, as Dr. Haller attests, from a practice of dissection continued for near eighty years, with a diligence, skill and accuracy in examining into morbid bodies, and the niceness of his dissections and of his anatomical injections, exceeded all his cotemporaries; and in fine, whose testimony in those matters was looked upon by Boerhaave and Haller, and by every medical writer since, to be as incontestible authority as that of any other person whatsoever.

In his first volume, observation the 16th, he says, "daily experience proves that worms may be generated in all parts of the body. I strangled a dog that was very lively three hours after being fed, with a view to examine the lacteal or milk vessels. On opening the belly of it a live worm, at least two spans in length, skipped out. I could discover nothing amiss in the omentum, nor any solution of continuity of the parts; and both the mesentery and intestines were found."

Again he says, observation 54, "I have had room to doubt whether, as Harvey and his followers affirm, all animals are produced out of an egg, from worms being found in the arteries of living horses; as also from worms seen in the parenchyma, or the glandular substance of the liver, as it is now called, and also in the cystic duct and biliary pores of sheep, and very often in the gall-bladder.

I remember

I remember once to have seen them in the human kidneys, and such as are more frequently met with in the kidneys of dogs. That worms have been sometimes found in the brain, no body can deny who will be at the trouble of turning over the writings of authors of high repute."

By what passages those animals or their eggs were insinuated into the interior parts of the body, is not easy to determine. It does not seem probable that they could reach the forementioned places through the pores of the skin or the organs of respiration; much less that their eggs were taken in at the mouth, and from thence proceeded to their respective places; nor yet is it likely they could remain entire in the stomach, where, in the process of chylification, there is a remarkable fermentation and breaking down the parts of the food. Nor can the chyloferous or lacteal vessels afford a passage to the eggs in their rout; and lastly, no one alledges that he has ever seen exactly similar worms out of the body.

Were I so disposed, or did the design of this paper require it, I could to those observations add many extraordinary instances, of strange, rare, and surprizing productions of animals in the human body, from the works of the celebrated Bartholine, physician to the king of Denmark, and from other grave and learned authors of unexceptionable repute. But here I pause, to reverence the hand that framed not only our bodies, but those of the meanest reptiles, with an exuberance of skill, which proclaims that they are not the effect of chance; and acknowledging I am lost in wonder, I leave the fuller explanation of the uncommon productions, to some happy genius that may arise, if ever it should please God to produce such an one into the world, who by tracing out the footsteps of the Creator, shall be able to throw clearer lights than we yet have, upon these abstruse subjects.